

# E-Cigarettes & Vaping: What you need to know

# Presenters

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# Agenda

- IDPH Overview
- What Are E-cigarettes?
- What are the Health Risks?
- What Leads to E-cigarette Use?
  - Signs and symptoms of addiction
- E-cigarette or Vaping Product Use Associated Lung Injury
  - Sign and symptoms
  - Illinois Outbreak: demographics
  - Illinois response
- What Can You do About It?

# Illinois Department of Public Health - Overview









# Origins of IDPH

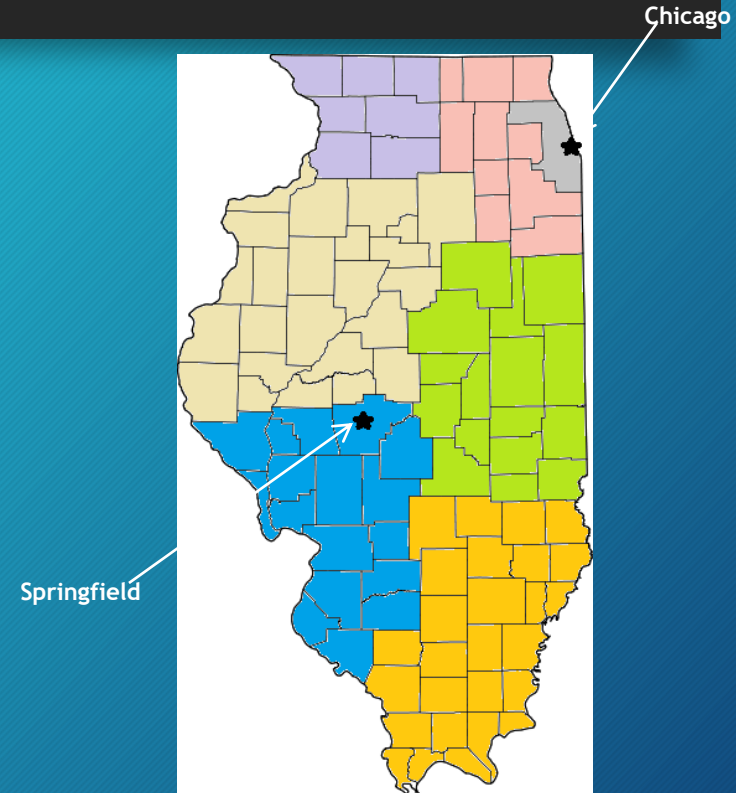
- The Illinois Department of Public Health has been promoting the health and well-being of Illinois citizens since 1877
- These first public health pioneers contended with the following:
  - Smallpox
  - Polio
  - TB
  - Unsanitary water and milk supplies
- Today's new challenges:
  - Health disparities & chronic conditions
  - Familiar — but now drug-resistant — diseases
  - Epidemics and the spread of disease
  - Protects against environmental hazards
  - Respond to disasters and assists communities in recovery



525 & 535 W. Jefferson offices in Springfield

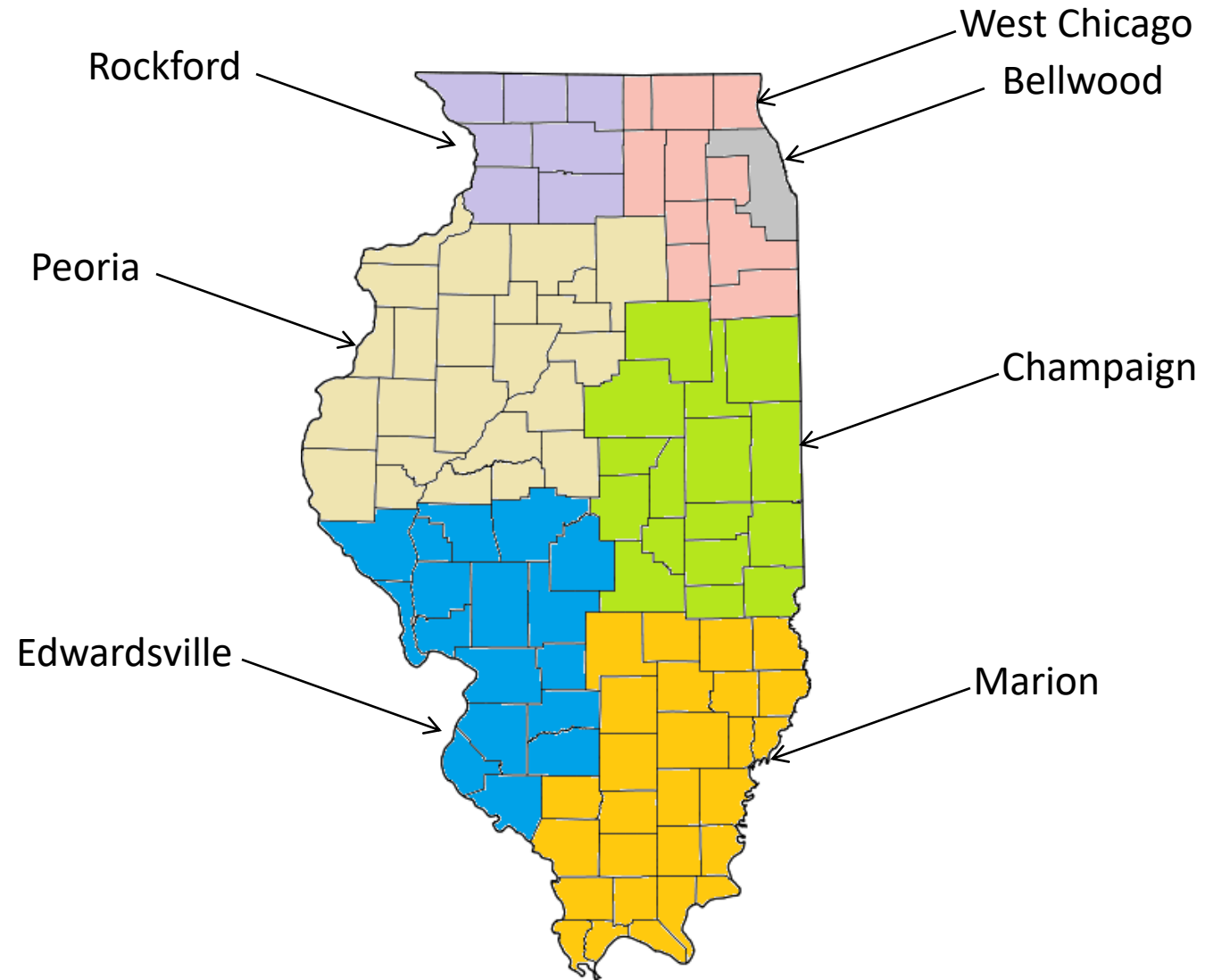
# IDPH at a Glance

- IDPH has headquarters in Springfield and Chicago.
  - Regional Health Offices
  - Laboratories
  - 1,100 employees
- Over 200 programs:
  - Childhood immunization
  - Food, water, and drug testing
  - Hospital and nursing home licensure
  - Infectious and chronic disease control
  - Vital records
  - Health statistics collection and evaluation
  - Newborn screenings
  - Women's health promotion
  - Emergency preparedness
  - Workforce development





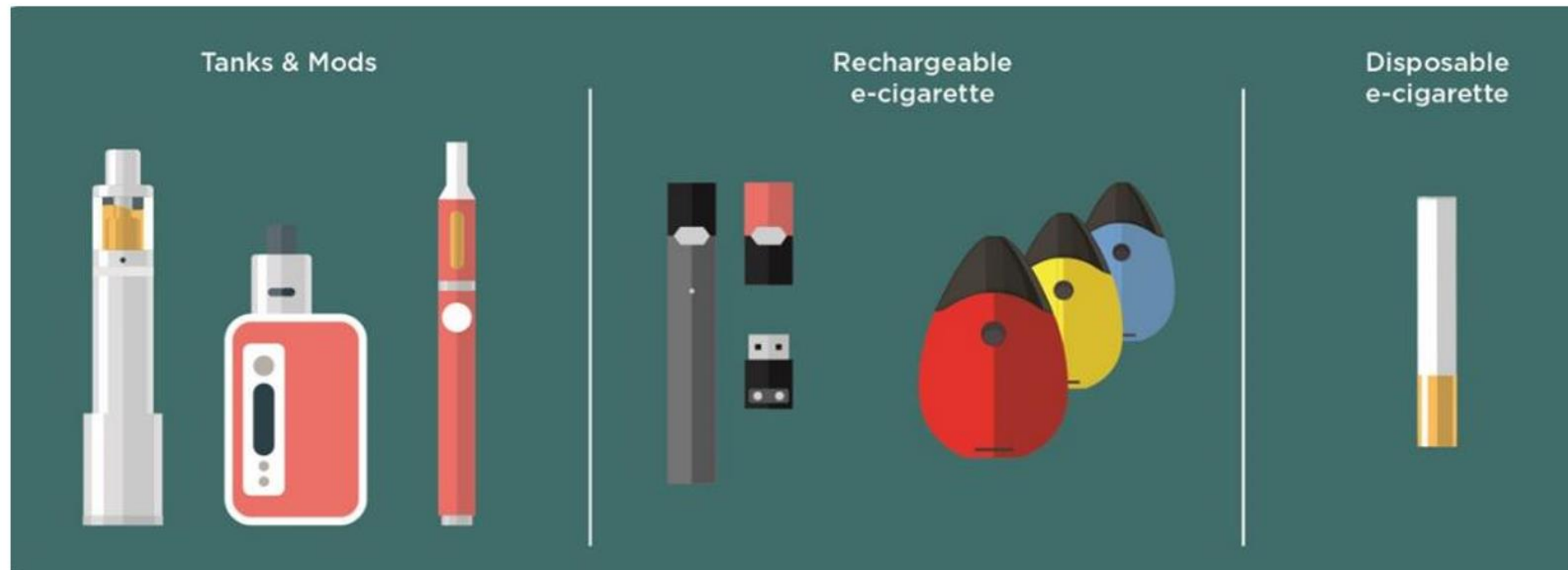
# IDPH Regions



# What Are E-cigarettes?



# NO MATTER WHAT YOU CALL IT, IT'S AN E-CIGARETTE



# E-CIGARETTES COME IN MANY DIFFERENT SHAPES



E-cigarettes are devices that heat a liquid into an aerosol that the user inhales.



# Devices

- Looks like a USB stick
- Low maintenance so it's most popular among teens
- Stopped selling popular flavored pods but third party pods claim to be compatible





# Devices

## Tanks, Mods, & Pens

- Modifiable to increase potency
- Uses e-juice: liquid that contains nicotine, metal particles, & harsh chemicals







Vape Pen







Bubble Gum



Chocolate



Cotton Candy



Grape



Gummy Bear

Vaping is frighteningly common, particularly among High School students.

- 23.1% of IL 12<sup>th</sup> grade students vape
- 9.7% of IL high school students vape THC

In 2018, more than  
**3.6 MILLION**  
U.S. middle and high school  
students used e-cigarettes in  
the past 30 days, including:

**4.9%**

MIDDLE SCHOOL  
STUDENTS

**20.8%**

HIGH SCHOOL  
STUDENTS



What are the Health Risks?



# What are the Health Risks?

- Most e-cigarettes contain nicotine, which is the addictive drug in regular cigarettes and other tobacco products.
- 99% of e-cigarettes contain nicotine.
- That is especially important for you to understand because nicotine can harm your brain, which continues to develop until you are about 25 years old.

## The harms of vaping



US Department of Health and Human Services. E-cigarette use among youth and young adults: a report of the Surgeon General. US Department of Health and Human Services, CDC: 2016.



The harms of vaping – unintended injuries from explosions





# E-cigarettes Make Aerosol, Not Vapor

THE E-CIGARETTE AEROSOL THAT USERS BREATHE FROM THE DEVICE AND EXHALE CAN CONTAIN HARMFUL SUBSTANCES:



Respiratory Medicine Case Reports

Elsevier

**Acute eosinophilic pneumonia  
following electronic cigarette use**

Zhaohui L. Arter, Amanda Wiggins, [...], and

Jordanna M. Hostler

**BMJ Case Reports**

Rare disease

CASE REPORT

Respiratory failure caused by lipoid pneumonia from vaping e-cigarettes

Darsana Viswam<sup>1</sup>, Simon Trotter<sup>2</sup>, P Sherwood Burge<sup>1</sup>, Gareth I Walters<sup>1</sup>

**PEDIATRICS®**

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

**Hypersensitivity Pneumonitis and Acute Respiratory Distress Syndrome From E-Cigarette Use**

Casey G. Sommerfeld, Daniel J. Weiner, Andrew Nowalk and Allyson Larkin

Pediatrics June 2018, 141 (6) e20163927; DOI: <https://doi.org/10.1542/peds.2016-3927>

# What Leads to E-cigarette Use?



## Surge in E-Cigarette Use Among Youth

**78%**

Increase  
Among High  
School Students

**11.7%**

2017

**20.8%**

2018



## Youth Exposure To E-cigarette Advertising is Increasing



**E-CIGARETTE ADS**

REACH NEARLY

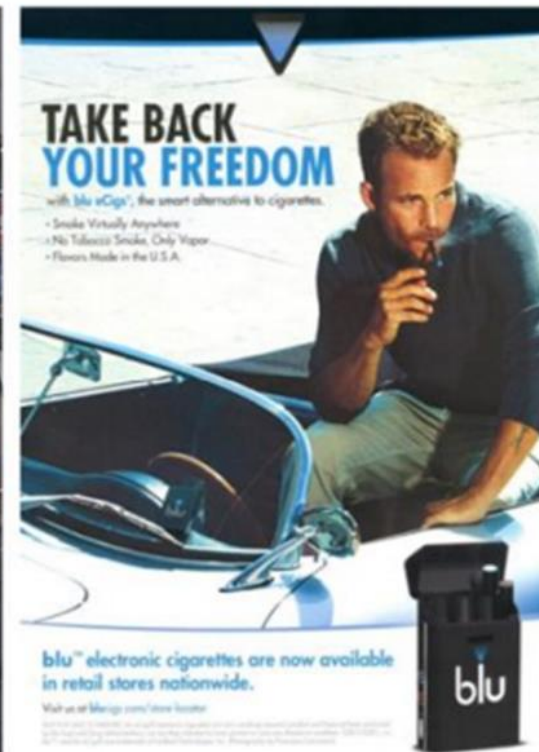
**4 IN 5**

U.S. MIDDLE AND  
HIGH SCHOOL STUDENTS





# Examples of E-cigarette Advertising



Sources: Marlboro ad on Google images, Vintage cigarette ads on Google images, JUUL billboard in NYC, blu eCig ad

# E-cigarette or Vaping Product Use Associated Lung Injury



# How the Outbreak was Uncovered

**The first cases were reported in neighboring Wisconsin in early July....**



health

Food Fitness Wellness Parenting Vital Signs

• LIVE TV

## The health officials who alerted the world to the alarming vaping illness

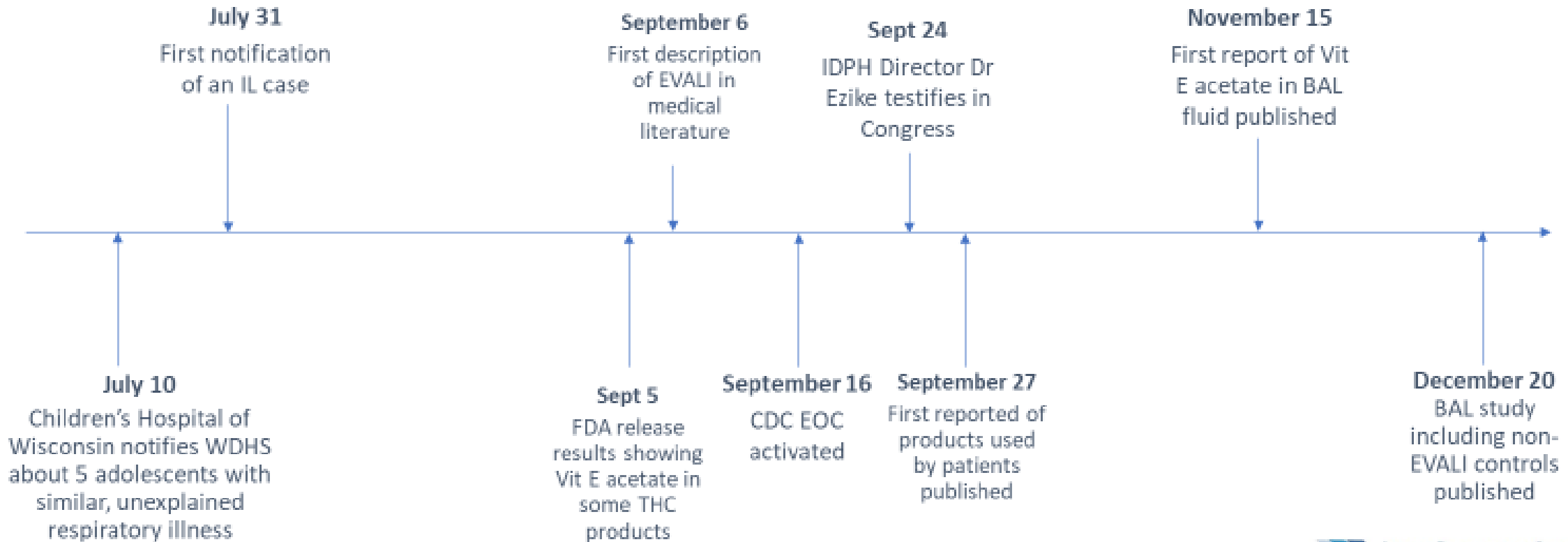
By Lauren Weber, Kaiser Health News

🕒 Updated 7:02 AM ET, Wed September 25, 2019



ILLINOIS DEPARTMENT OF PUBLIC HEALTH  
**IDPH**  
PROTECTING HEALTH. IMPROVING LIVES

## How the outbreak was uncovered

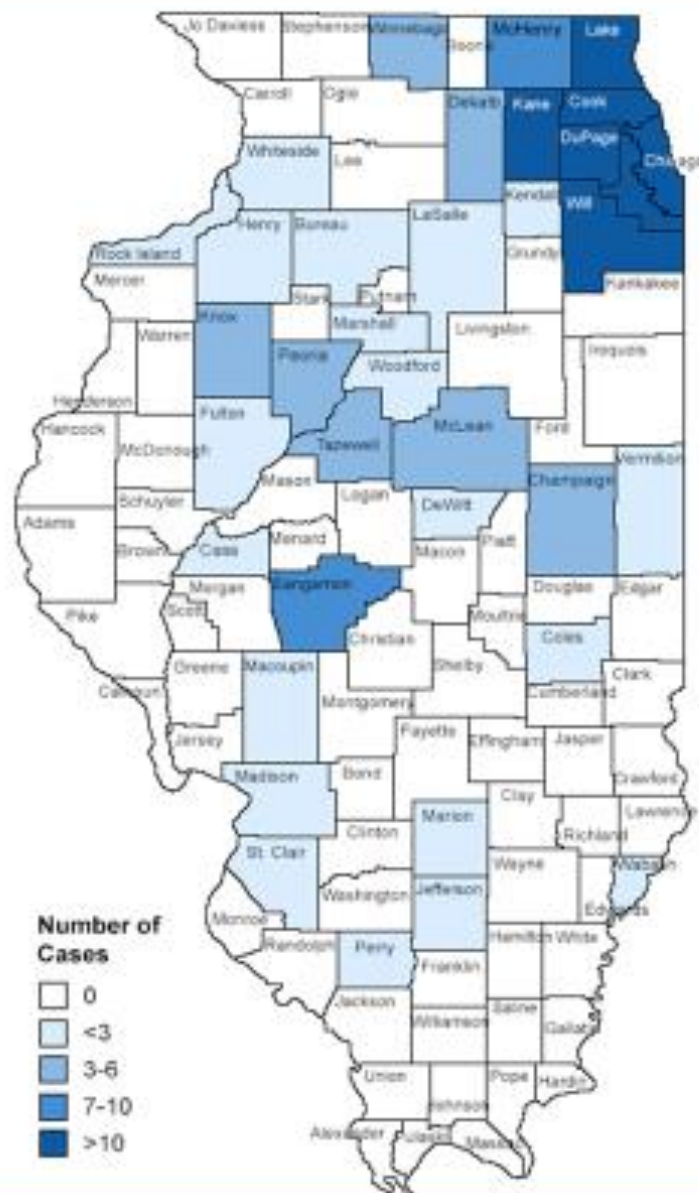




## How the outbreak was uncovered

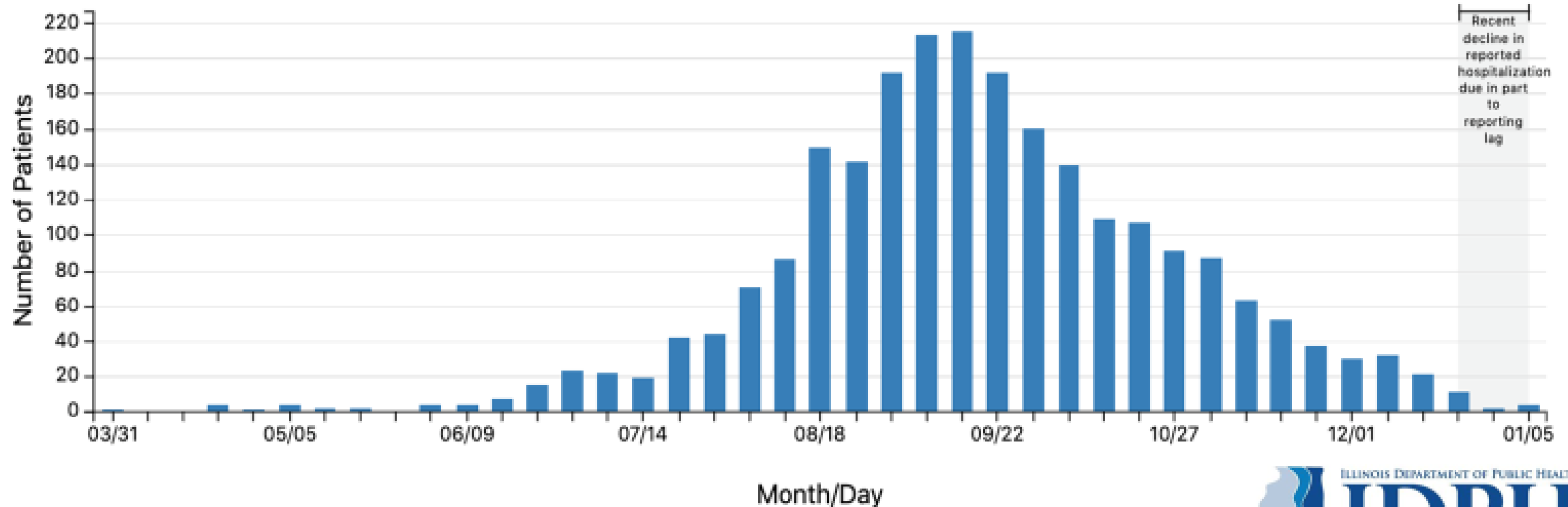
**>200 cases in IL**

**Confirmed and  
probable cases in  
Illinois, by local  
health department**



## How the outbreak was uncovered

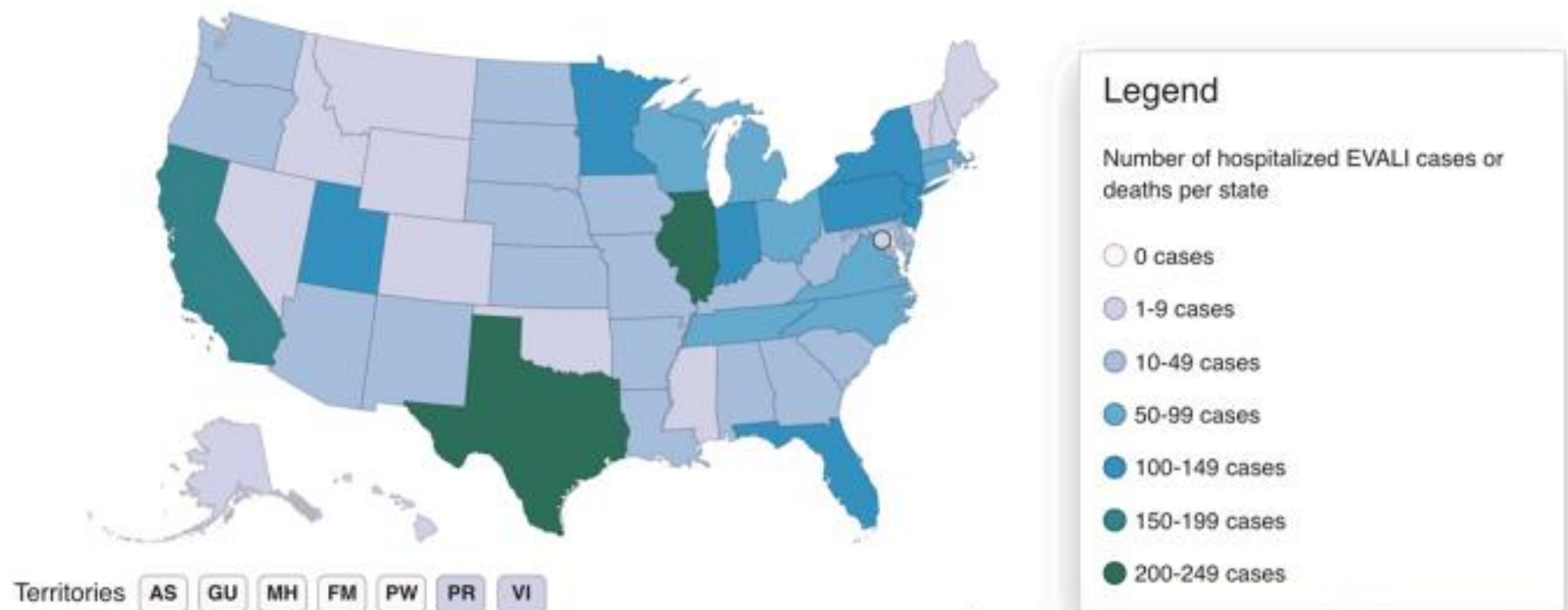
Number of hospitalized EVALI patients by date of admission — United States, March 31, 2019–January 11, 2020





## How the outbreak was uncovered

Number of Hospitalized EVALI Cases or Deaths Reported to CDC as of January 14, 2020



As of Feb 4, 2020

2,758 hospitalizations

64 deaths

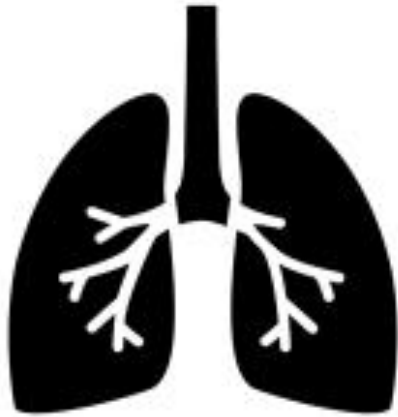


# Recent Respiratory Illnesses

- 218 cases across Illinois connected to vaping including 5 deaths.
- Cases reported use of both Nicotine and THC.
- Symptoms include:
  - Chest pain, coughing
  - Nausea, vomiting, or diarrhea
  - Difficulty breathing/shortness of breath
  - Fatigue, fever, or abdominal pain

## What this new syndrome looks like

### Respiratory symptoms



Shortness of breath, pleuritic chest pain, dry cough

**98%**

### Gastrointestinal symptoms



Vomiting, diarrhea, abdominal pain

**81%**

### Constitutional symptoms



Fever, chills, weight loss

**100%**



Pulmonary Illness Related to E-Cigarette Use in Illinois and Wisconsin — Preliminary Report. *New England Journal of Medicine*. September 2019.



## What this new syndrome looks like



### Nationally:

- Vast majority hospitalized\*
- 40% admitted to ICU
- 15% requiring intubation
- Some requiring ECMO/lung transplant
- Some readmitted
- 2% die

## What this new syndrome looks like

Median age = 24 (range = 13-85)

66% male

Usually fit and well

One quarter of patients have chronic respiratory disease\*

Half have some mental/emotional/behavioral disorder\*

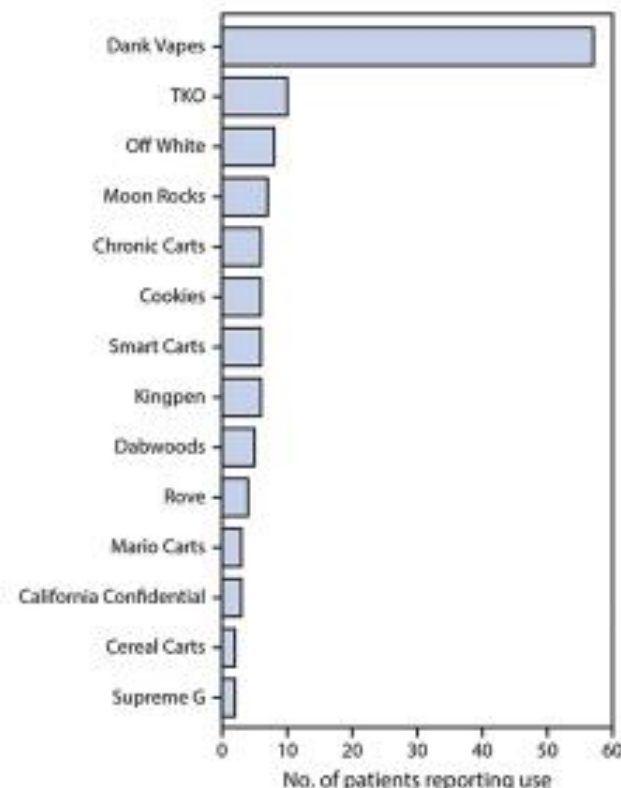
Patients who died were often older with chronic conditions

\*very inclusive definitions used, e.g. self-reported asthma.

Mikosz, C. et al. Characteristics of Patients Experiencing Rehospitalization or Death After Hospital Discharge in a Nationwide Outbreak of E-cigarette, or Vaping, Product Use–Associated Lung Injury — United States, 2019. MMWR

### Analyzing interview data has shown:

1. Devices unlikely to be source
2. Patients not adding their own substances to devices
3. Implicated THC pre-filled cartridges (e.g. Dank Vapes)





## Steps of an outbreak investigation – develop and evaluate hypotheses

Some of the products submitted by patients



The Washington Post  
Democracy Dies in Darkness

Health

## Contaminant found in marijuana vaping products linked to deadly lung illnesses, tests show



Not conclusive, but FDA and other labs have found vitamin E acetate in vaping products.

## **Strength of association (and dose response)...**

85% EVALI patients use THC, compared to 21% of e-cigarette users in a public survey...

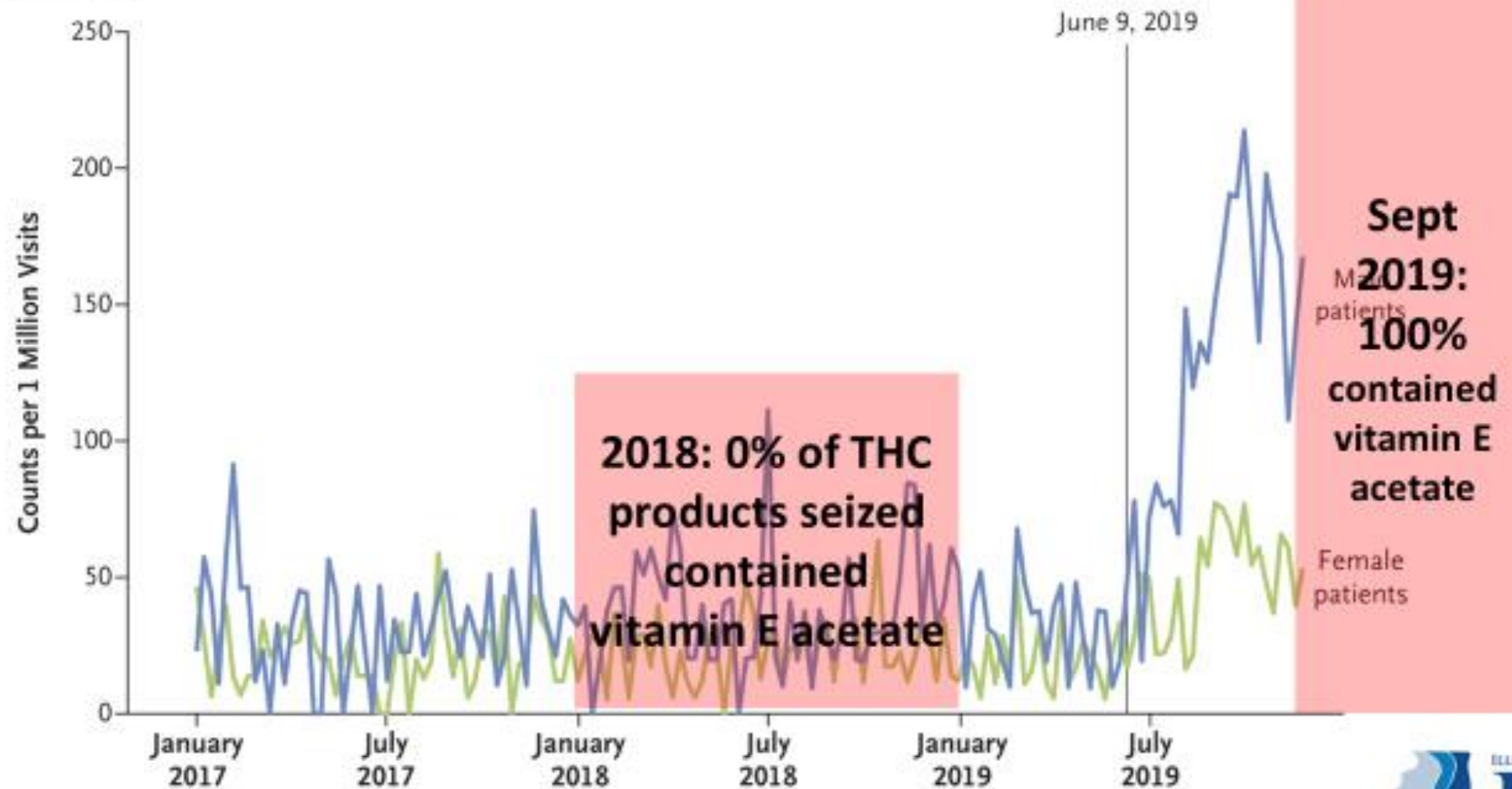
Even amongst THC-vapers:

- exclusively using THC (adjusted odds ratio (AOR) 2.0)
- using more than 5 times a day (AOR 3.1)
- using Dank Vapes (AOR 8.5)
- using informally sourced THC (AOR 9.2)

Navon, L. et al. Risk Factors for E-Cigarette, or Vaping, Product Use–Associated Lung Injury (EVALI) Among Adults Who Use E-Cigarette, or Vaping, Products — Illinois, July–October 2019. MMWR.



## Temporality



Taylor, J. et al. Characteristics of E-cigarette, or Vaping, Products Used by Patients with Associated Lung Injury and Products Seized by Law Enforcement — Minnesota, 2018 and 2019, MMWR.

## Conclusions

E-cigarettes can cause harm in a number of different ways.

- Adults who do not currently use tobacco products should not start using e-cigarette products
- Adults using nicotine-containing e-cigarette or vaping products as an alternative to cigarettes should not go back to smoking
- Youths, young adults or pregnant women should never use e-cigarette products

PCPs can and should encourage and support people to quit tobacco products, including e-cigarettes.

## Conclusions

This EVALI outbreak is strongly linked to vitamin E acetate in THC-containing e-cigarette products.

Cautiously assess anyone discharged following EVALI

- Readmissions are not infrequent

- Deaths have occurred following hospital discharge

- Low threshold for referral back to hospital



What Can You do About It?

# What Can You do About It?

- IDPH recommends you refrain from using e-cigarette and vaping products that contain Nicotine and THC.
- Do not buy products off the street, and not modify or add any substances to these products.
- See a health care provider if you experience any symptoms related to difficulty of breathing.

A message from  
Illinois Department  
of Public Health



**It's time  
to quit**

It's now or never

Join hundreds of others  
who are taking the first step to kick the habit

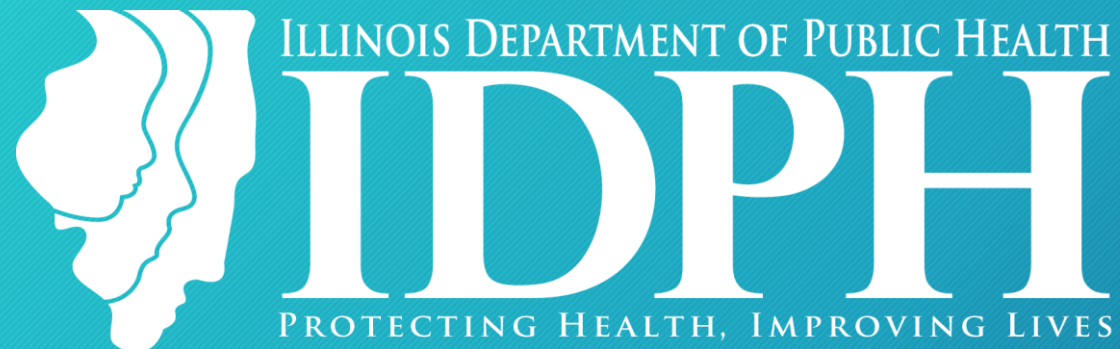
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Go to [www.quityes.org](http://www.quityes.org) to learn more





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